

**Stonehenge as a public health intervention device for preventing lithospheric magnetic field–induced emerging diseases and megadeath during periods of severely weaken geomagnetic field:
A reinterpretation of the actions of Neolithic Europeans in constructing megaliths and its implication on the severely weakening geomagnetic field in continental United States.**

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Running title: Stonehedge as a Neolithic-European public health device during weakening geomagnetic field.

Grant and funding source: This work is not funded. Acknowledgements: Students in my laboratory who help collect data on rats will be included upon completion of the full manuscript.

Lay-Extended Abstract

Stonehenge is a structure that was constructed in Southern Britain by ancient Europeans [1, 2] during a period that was associated with rapid and massive population collapse [3, 4] across Europe, which occurred about 6,000-5,000 years ago, and lasted for over 1,000 years. This period of the rapid and massive population collapse coincided with Europe (including Britain), experiencing severe weakening in the magnetic field (also occurring about 6,000-5,000 years ago) [5, 6]; with the magnetic field recovery, coinciding with the recovery of the population [3]. There are several competing theories as to the purpose of Stonehenge, ranging from astronomical, ritualistic cemetery, religious to healing purposes. In 2008, Archaeologists Timothy Darvill and Geoffrey Wainwright proposed the theory that Stonehenge was constructed for medical/healing purposes, and interpreted evidences of buried individuals from different geographic regions of Europe, with skeletal tissue-associated disease as indication of a complex, constructed for healing purposes. Additionally, Timothy Darvill and Geoffrey Wainwright interpreted the special “blue” rocks (called igneous rocks) that were moved over very long distances for the construction of Stonehenge as possessing healing power to ancient Europeans; however, said perceptions are currently interpreted as superstitious and ritualistic. Here, I argue that Stonehenge was a complex for preventing emerging skeletal tissue-associated diseases along with other emerging diseases during periods of severe weakening of the Earth’s magnetic field, which was coupled to rapid and massive population collapse. I propose that ancient Europeans specifically selected Wiltshire, England for the construction of Stonehenge, because the unique ground, which is made of chalk [7], provides a location with negligible magnetic field [8, 9]. Consequently, Wiltshire provided the ideal location to precisely construct a man-made magnetic field, for use as a state-of-the-art public health intervention device. Ancient Europeans selected various rocks that covers the Earth’s surface in Britain and the rest of Europe in order to recreate the magnetic field generated by those rocks, which they would experience in the upcoming seasons. Consequently, the giant rocks at Stonehenge are sedimentary rocks (Sarsen stones), which covers ~75% of the Earth’s land surface, while the smaller rocks are igneous rocks (Blue stones), which covers a relatively smaller percentage of the Earth’s land surface [10]. The magnetic field of the rocks in the Earth’s crust is predominately generated by iron deposits in the rocks, with smaller contribution from other metals deposited in rocks [11]. The sun regulates that magnetic field, especially when the Earth’s magnetic field (the geomagnetic field), which is normally very stable and relatively strong, becomes very weak [11]. In addition to being critical

for generating the magnetic field of rocks in the Earth's crust, iron is critical for life on Earth, and disruption of the iron in humans and other animals causes severe disease [12, 13]. At present, there are two overarching theories that describe how the stuff that a thing or a person is made of (called matter) works, namely quantum theory and classical theory; however, these two theories do not agree with each other. Currently, the vast majority of scientists describe almost everything in our daily lives, including human disease, using classical theory, but they can't describe how the behavior of the tiny things (called atoms and subatomic particles) that makes up a person or a thing, affect our daily lives or disease. A very small group of scientists use quantum theory to describe the behavior of the tiny things that makes up a person or a thing (such as rocks); however, the current agreement among the vast majority of scientists is that quantum theory does not extend to our daily lives and human disease. Here, I argue that ancient Europeans theorized that "quantum effects" are not just restricted to the tiny things (called atoms and subatomic particles) that make up a person or a thing, but also affect every aspect of our daily lives, including human disease. A consequence of quantum theory is called "spooky-action at a distance" (also called, quantum entanglement or spin coupling) [14-19]. I propose that ancient Europeans theorized that when the Earth's magnetic field weakens, the magnetic field generated by iron (and other metals) in rocks become increasingly excited by the seasonal and daily changes associated with the sun, this causes the iron (and other metals) in rocks to have "spooky-action at a distance" with iron and other metals in the human body, which results in skeletal tissue-associated diseases and other diseases [20]. This "spooky-action at a distance" between the irons in rocks and iron (along with other metals) in the human body causes damage via quantum mechanisms, called "spin catalysis" and the "radical-pair mechanism" [21-28], which can produce molecules/particles and activities that cause disease. I propose that, at Stonehenge, ancient Europeans were exposed for a very short time, to a precise, weaken dose of this "spooky-action at a distance" that is mediated by iron in rocks, so as to induce their body's natural resistance to severe disease and death at later times in the upcoming solar season; this disease prevention strategy is called "hormesies" [29-31]. This public health intervention strategy is similar to the current seasonal influenza prevention strategy in modern medicine, wherein, individuals visit their local medical/public health centers seasonally, and are exposed to a precise and weaken dose of influenza virus (vaccination) early in the season, in order to prevent severe disease later in the season. The quantum theory-based public health knowledge of ancient Europeans could be applicable today, as the Earth's magnetic field is once again experiencing severe

weakening, especially in continental United States. In agreement with this theory, I along with students in my laboratory (to be named in full manuscript) have documented skeletal tissue/neuromuscular-associated diseases (weak hind limbs, along with abrupt seizures in healthy animals) in my rat colony in a building (BST3-University of Pittsburgh) in Pittsburgh, Pennsylvania, United states. Importantly, the BST3 building mimics Stonehenge structure, in that the exterior wall of the building is made of large blocks of sedimentary rocks, which is surrounded by a concentric sphere of very small igneous rocks (granite). Emerging skeletal tissue/neuromuscular-associated disease (weak hind limbs) have also been reported (by Florida Fish and Wildlife Conservation Commission) in other animals, most notably, kittens and adolescent Bobcats and Panthers and domestic dogs in Florida. Importantly, over the past few years, an emerging skeletal tissue/neuromuscular-associated disease (weak limbs), called Acute flaccid myelitis (AFM) has affected many children and adolescents in the United States, including the greater Pittsburgh region in Western Pennsylvania [32-34]. These emerging skeletal tissue/neuromuscular-associated diseases (weak limbs) in animals (rats in my lab at Pitt, large cats and dogs in Florida) and humans in continental United States appears to follow a “quasi-biannual oscillation” (an outbreak occurs every other year) [33, 34], which coincides with the “quasi-biannual oscillation” of the Earth’s magnetic field (the magnetic field changes every other year) [35], and high excitation levels of the magnetic field of rocks in the Earth’s crust in the northern hemisphere (late summer to early Fall) [36]. In summary, I argue that Stonehenge was an evidence based-public health intervention device that was used to prevent magnetic field-induced emerging diseases and megadeath during periods of severe weakening in the Earth’s magnetic field. Importantly, comparable public health intervention strategies via modulating the Earth’s magnetic field have also been applied by other ancient cultures around the world, during periods of severe weakening in the Earth’s magnetic field; this includes the Rapa Nui-megaliths on Easter Island and iron-age Africans burning clay in the Earth in the Limpopo River Basin in southern Africa.

Technical-Extended Abstract

Stonehenge is a structure that was constructed in Southern Britain by Neolithic Europeans [1, 2] during a period that was associated with rapid and massive population collapse [3, 4] across Europe, which occurred about 6,000-5,000 years ago, and lasted for over 1,000 years. This period of the rapid and massive population collapse coincided with Europe (including Britain) experiencing severe weakening geomagnetic field strength (also occurring about 6,000-5,000 years ago) [5, 6], with geomagnetic field strength recovery, coinciding with the recovery of the population [3]. There are several competing theories as to the purpose of Stonehenge, ranging from astronomical, ritualistic cemetery, religious to healing purposes. In 2008, Archaeologists Timothy Darvill and Geoffrey Wainwright proposed the theory that Stonehenge was constructed for medical/healing purposes, and interpreted evidences of interred individuals from different geographic regions of Europe, with skeletal tissue-associated disease as indication of a complex, constructed for healing purposes. Additionally, Timothy Darvill and Geoffrey Wainwright interpreted the igneous rocks (blue stones-dolerite) that were moved over 150 miles from south Wales for the construction of Stonehenge as possessing healing power to Neolithic Europeans; however, said perceptions are currently interpreted as superstitious and ritualistic. Here, I argue that Stonehenge was a complex for preventing emerging skeletal tissue-associated diseases along with other emerging diseases during periods of severe weakening of the geomagnetic field, which was coupled to rapid and massive population collapse. I propose that Neolithic Europeans selected Wiltshire, England for the construction of Stonehenge because the unique bedrock, which is made of chalk [7]; thus, there is negligible lithospheric magnetic field in that region [8, 9]. The chalk bedrock at Wiltshire provided the ideal location to precisely construct an artificial-lithospheric magnetic field, for use as a state-of-the-art hormesis device. Neolithic Europeans selected various rocks that covers the Earth's surface in Britain and the rest of Europe in order to recreate the lithospheric magnetic field, which they would experience in the upcoming seasons. Consequently, the giant rocks at Stonehenge are sedimentary rocks (Sarsen stones), which covers ~75% of the Earth's surface, while the smaller rocks are igneous rocks (Blue stones), which covers a relatively smaller percentage of the Earth's Surface [10]. The lithospheric magnetic field is predominately generated by iron oxides deposits (i.e. magnetite) in the Earth's crust, with smaller contribution from other metals [11]. The solar-magnetosphere-ionosphere coupled system regulates that lithospheric magnetic field, especially during periods of severe weakening in the geomagnetic field; this is due to the high magnetic susceptibility of iron

oxides in the lithosphere [11]. Iron is also an essential metal in humans and other terrestrial/marine life, thus dysregulation of iron has a major impact on a myriad of biochemical reactions and health. [12, 13]. Currently, a major debate in science revolves around the limits of quantum effects (i.e. does quantum effects exist beyond the atomic scale); here, I argue that Neolithic Europeans theorized that quantum effects are manifested beyond the atomic scale, and governs human health. Consequently, quantum effects such as spin coupling plays a dominant role in human health, with the current dominant theories in the biological/medical sciences, merely classical approximations for relatively stable/non-excited lithospheric magnetic field limit [14-19]. I propose that Neolithic Europeans theorized that excited iron oxides (and other metals) in the lithosphere generates a magnetic field and associated very low frequency electromagnetic (radio) waves, which couples (spin coupling) to iron and other metals in humans, and mediated aberrant synthesis, biological activities and disease [20] via spin catalysis and the radical-pair mechanism [21-28]. At Stonehenge, Neolithic Europeans were exposed for a very short time, to a precise, non-pathogenic intensity of the lithospheric magnetic field for the upcoming season, during the summer solstice and the winter solstice, which are the periods with the lowest excitation levels of the ionospheric magnetic field in the northern hemisphere [36]. Said calendar-associated, non-pathogenic exposure to lithospheric magnetic field mimic hormesies [29-31], and induced a robust host defense (namely, anti-oxidant, tissue repair and immune response systems) against future exposure and associated disease and death; much like seasonal vaccination against seasonal influenza viruses in modern society. The quantum theoretic-public health knowledge of Neolithic Europeans during periods of severely weaken geomagnetic field has profound implication for terrestrial/marine life in continental United States, which is currently experiencing severely decreasing geomagnetic field and concomitant excited lithospheric magnetic field. In agreement with the theory proposed here, I along with students in my laboratory (to be named in full manuscript) have documented skeletal tissue/neuromuscular-associated disease (weak hind limbs, along with abrupt seizures in healthy animals) in my rat colony in a building (BST3-University of Pittsburgh) in Pittsburgh, Pennsylvania, United states, that is associated with high levels of ionosphere total electron count (late summer to early Fall) [36]. Importantly, the BST3 building at the University of Pittsburgh mimics Stonehenge, in that the exterior wall of the building is made of large blocks of sedimentary rocks, which is surrounded by a concentric sphere of very small igneous rocks (granite). Emerging skeletal tissue/neuromuscular-associated disease (weak hind limbs) have also been reported (by Florida Fish and Wildlife Conservation Commission) in other

animals, most notably, kittens and adolescent Bobcats and Panthers and domestic dogs. Importantly, over the past few years, an emerging skeletal tissue/neuromuscular-associated disease (weak limbs), called Acute flaccid myelitis (AFM) has affected many children and adolescents in the United States, including the greater Pittsburgh region in Western Pennsylvania [32-34]. These emerging skeletal tissue/neuromuscular-associated diseases (weak limbs) in animals and humans in the continental United States appears to follow a quasi-biannual oscillation [33, 34], which coincides with the quasi-biannual oscillation of the geomagnetic field [35], and high levels of ionosphere total electron count (late summer to early Fall) [36]. In summary, I argue that Stonehenge was an evidence based-public health intervention device (a hormesis device), which was used to prevent lithospheric magnetic field-induced emerging diseases and megadeath, during periods of severely weakened, geomagnetic field strength. Importantly, comparable public health intervention strategies in modulating the lithospheric magnetic field have also been applied by other ancient cultures around the world during periods of severe weakening of the geomagnetic field strength, with notable examples, including the Rapa Nui-megaliths around Easter Island and iron-age Africans burning and rapidly cooling clay in their habitable and communal spaces in the Limpopo River basin.

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